

**Work Order ID 53388**

November 3, 2009 9:51:08 AM



Page 1

Item ID: D407-667-105TRN

Accept



Setup Start



Revision ID: C

Stop



Item Name: Crosstube Turning Detail

Start Date: 03/11/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 16/11/2009 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan: PSDate: 09-11-3

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D407-667-145	Rev C								

100

0.00



MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs DT8673 on both ends as per Folio  
FA249□2-Turn first side as per Folio FA249□3- File transition lines smooth.

Q.M. 09-11-24②

110

0.00



QC1- Inspect dimensions to dimension sheet

QC

Memo

0.00

Quality Control

Q.M. 09-11-24②

120

0.00



MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Turn second side as per Folio FA249□2- File transition lines smooth.□3-  
Remove sand and plugs□4-Scribe part # and batch # using vibrating stylus as  
per Dwg D206-667-145 □Inside of Cuff(Do not engrave on outside of tube)

Q.M. 09-11-24②

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Page 2

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Item Name: Crosstube Turning Detail

Start Date: 03/11/2009 Start Qty: 1.00

Required Date: 16/11/2009 Req'd Qty: 1.00

Reference:

Accept



Setup Start



Stop



Cust Item ID:

Customer:

Run Start



Stop



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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130



QC

Quality Control

QC1- Inspect dimensions to dimension sheet

0.00

Memo

0.00

QC 09-11-24

140



QC

Quality Control

QC8- Inspect parts - second check

0.00

Memo

0.00

1 - - AWM 9-11-25

150



HandFXtube

Hand Finishing Crosstubes

Crosstubes Chemical Conversion

0.00

Memo

0.00

1 - - AWM 9-11-25

# Work Order ID 53388

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Page 3

Item ID: D407-667-105TRN

Accept



Setup Start



Revision ID: C

Stop



Item Name: Crosstube Turning Detail

Start Date: 03/11/2009 Start Qty: 1.00



Cust Item ID:

Required Date: 16/11/2009 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Draw  
Number

Draw  
Rev.

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

160



QC

Quality Control

QC3- Inspect Part Finish

0.00

Memo

0.00

(TK)

Q

ND 09-11-25

170



Packaging

Packaging

Packaging

0.00

Memo

0.00

Identify and stock in Kanban rack Location:

X-TUBE CELL

1

-

AWM 9-11-25

180



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

09/11/25

09/11-25

# Picklist Print

November 3, 2009 9:51:12 AM

Page 1

Work Order ID: 53388

Parent Item: D407-667-105TRNRevC

Parent Item Name: Crosstube Turning Detail


Comments:

Start Date: 03/11/2009

Required Date: 16/11/2009

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D6010-115RevA		Manufactured	No			110	Each	55.0000	1.0000			
												
Crosstube Material												

*Q.N 09-11-24*

Warehouse                      Loc Qty                      Loc Code

Location

Main Warehouse

LG

55

26424

4

32308

6

38343

45

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b>	53388
<b>Description: Crosstube Assembly</b>		<b>Part Number:</b>	D407-667-145
<b>Inspection Dwg: D407-667-145 Rev: C</b>		<b>Page 1 of 1</b>	

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

Inspection Sheet	Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.240	/			
	1.865	+0.005/-0.000	1.869	/			
	1.878	+0.005/-0.000	1.881	/			
	1.970	+0.005/-0.000	1.975	/			
	2.030	+0.005/-0.000	2.030	/			
	2.165	+0.005/-0.000	2.170	/			
	0.125	+/-0.010	0.125	/			
	R0.063	+/-0.010	R0.063	/			
	R0.500	+/-0.010	R0.500	/			
SIDE B	R0.063	+/-0.010	R0.063	/			
	4.438	+/-0.010	4.438	/			
	2.240	+0.005/-0.000	2.240	/			
	1.865	+0.005/-0.000	1.869	/			
	1.878	+0.005/-0.000	1.881	/			
	1.970	+0.005/-0.000	1.975	/			
	2.030	+0.005/-0.000	2.030	/			
	2.165	+0.005/-0.000	2.170	/			
	0.125	+/-0.010	0.125	/			
	R0.063	+/-0.010	R0.063	/			
	R0.500	+/-0.010	R0.500	/			
	R0.063	+/-0.010	R0.063	/			
	4.438	+/-0.010	4.438	/			
	113.20	+/-0.020	113.200	/			

<b>Measured by:</b>	Q. M	<b>Audited by:</b>	ANM	<b>Prototype Approval:</b>	N/A
<b>Date:</b>	09.11.24	<b>Date:</b>	9.11.25	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A	04.04.21	New Issue (P/O D407-667-105)	KJ/RF	
B	06.03.09	Dwg Rev updated	KJ/JLM	
C	09.06.11	Dwg Rev updated	KJ	

Item	Qty -145	Part Number	Description
1	X	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
2	1	D6010-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W 10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2, ADHESIVE)

# **GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6010-115  
FINISHED LENGTH = 113.20±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-145" AND BATCH NUMBER ON  
INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 17.8 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,  
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE  
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER  
QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE  
THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS  
ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS  
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT  
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN  
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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08/11/12

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. 7 ADD TOLERANCES (ZN C6-3, C4-3, D2-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	02.05.08
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. C
CHECKED	RF	D407-667-145	SHEET 1 OF 4
MFG. APPR.	RF	TITLE	SCALE
APPROVED	RF	CROSSTUBE ASS'Y (407 HIGH FWD)	NTS
DE APPR.	RF	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR DISCLOSED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
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8

7

6

5

4

3

2

1

12

D2891-1 SUPPORT  
2 PL

15

MS21920-20 CLAMP  
4 PL

C 13

D3595-063-395  
RUBBER CUSHION  
4 PL. (UNDER CLAMP)

B

13.08

B

A4-2

D407-667-505

B7-2

D2873-043  
NUT PLATE

MS20601AD4W10  
RIVET, 4 PL

D2873-045  
NUT PLATE

MS20601AD4W10  
RIVET, 3 PL

90°  
REF

VIEW A-A:  
CUFF DETAIL  
SCALE 4X

C

D407-667-145  
ASSEMBLY DETAIL  
(VIEW LOOKING FWD)

13 15

MS21920-20 CLAMP REF

12

D2891-1 SUPPORT REF

C

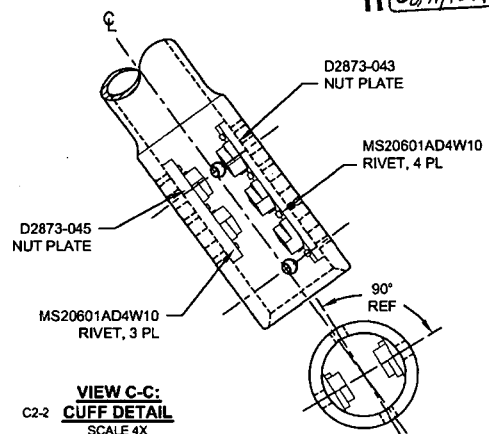
D3595-063-395  
RUBBER CUSHION  
REF

FWD

6°

SECTION B-B  
SCALE 5X

RELEASE  
08/11/06



VIEW C-C:  
CUFF DETAIL  
SCALE 4X

DESIGN	90	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. C
CHECKED	CP	D407-667-145	SHEET 2 OF 4
MFG. APPR.	EF	TITLE	SCALE
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8

7

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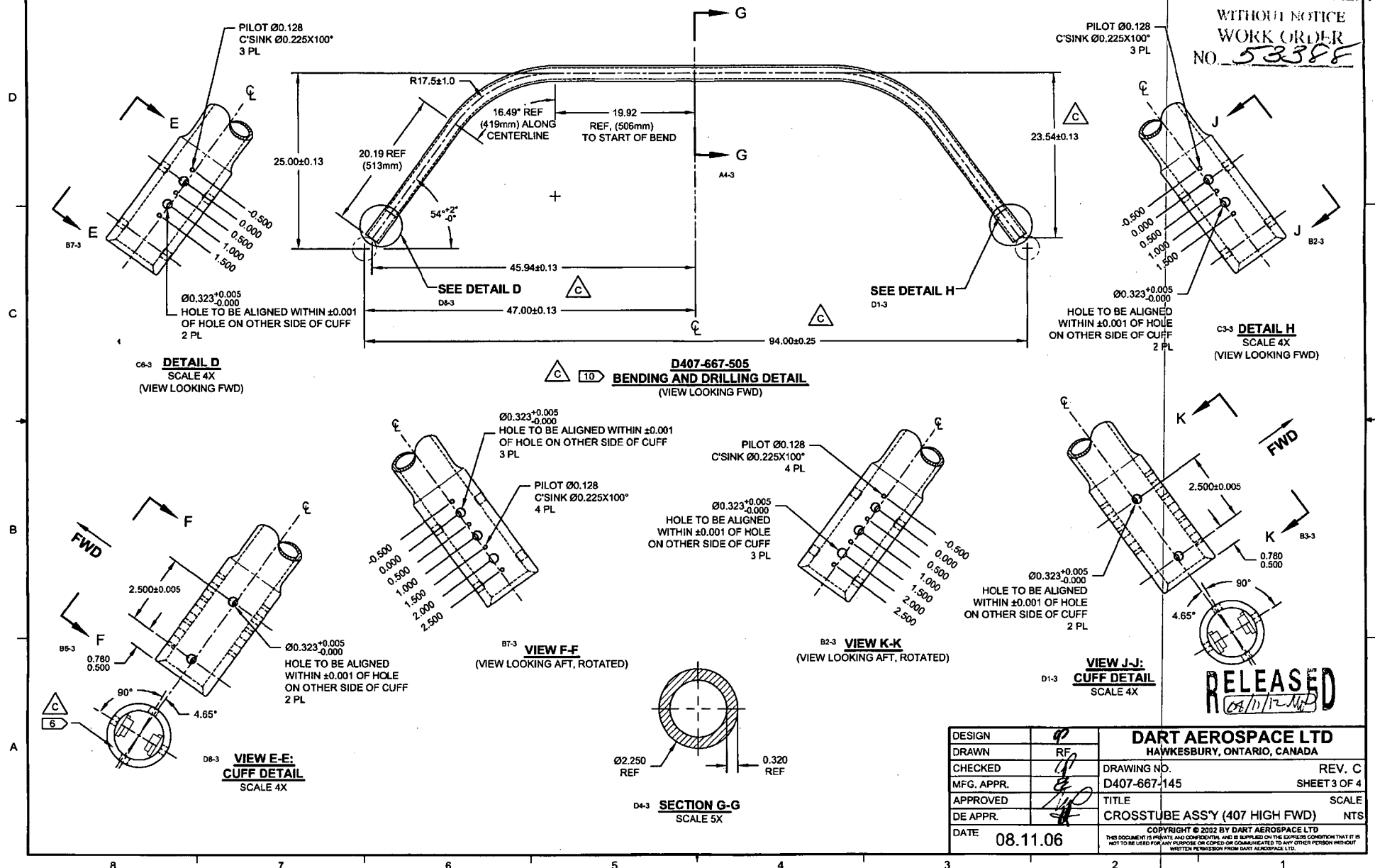
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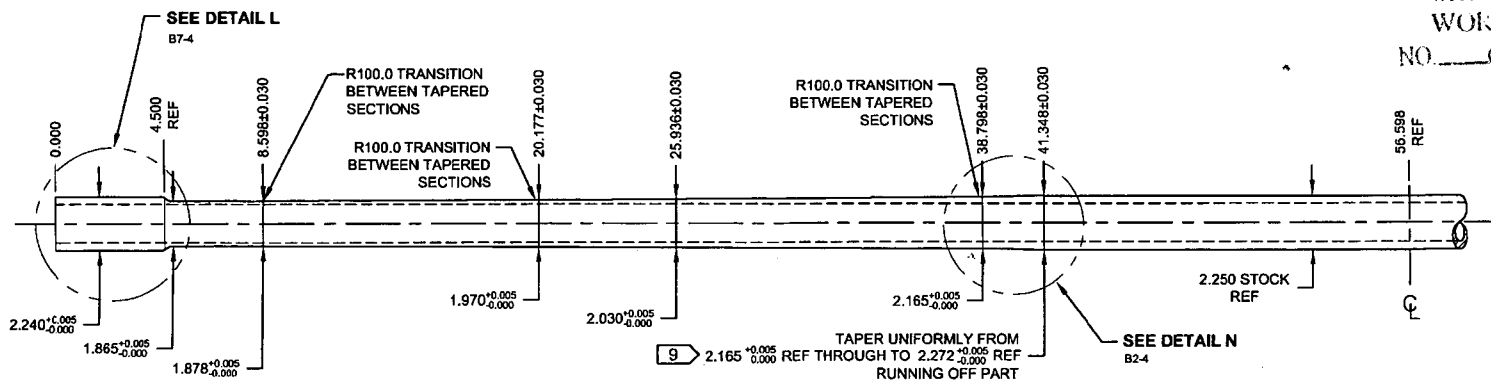
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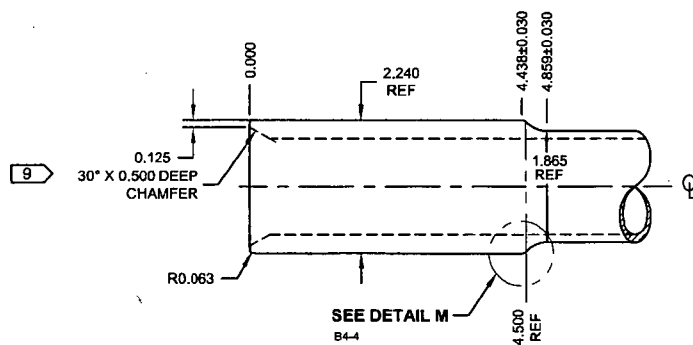
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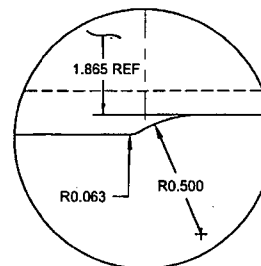
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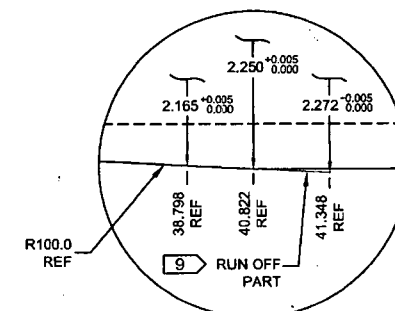
**TURNING DETAIL**



**DETAIL L:**  
CROSSTUBE CUFF  
NOT TO SCALE



**DETAIL M:**  
CUFF TRANSITION  
NOT TO SCALE



**DETAIL N:**  
TAPER RUN-OFF  
NOT TO SCALE

**RELEASED**  
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